

68515
Cataclastic Anorthosite
236 grams



Figure 1: Picture of 68515. Cube is 1 cm. S72-43456



Figure 2: Back side of 68515 showing glass coating. S72-43452



Figure 3 a,b: Two additional views of the back side of 68515. Cube is 1 cm. S72-43450 and S72-43459

Introduction

68515 is a relatively large rake sample that has still not been analyzed.

Petrography

Ryder and Norman termed 68515 a polymict breccia, while Steele and Smith (1973) refer to it as a “complex, black and white breccia with some devitrified glass”. However, the largest part of it appears to be a cataclastic anorthosite. A portion may be impact melt breccia.

McGee (1993) gave the following description: “*Sample 68515 is a cataclastic anorthosite with relict, coarse granulitic texture. No previous mineral chemical data have been published. The granulitic plagioclase is seriate, with grain sizes as much as 1 mm. Rare pyroxenes are less than 0.1 mm across and are generally free of visible exsolution lamellae. One lithic clast has relict subophitic texture. Plagioclase compositions have a relatively large range (figure). Pyroxene is homogeneous (figure). Rare (Zn,Fe)S is present.*”

Mineralogy

Pyroxene: The pyroxene in 68515 is typical of ferraon anorthosite (McGee 1993) (figure 5).

Plagioclase: McGee (1993) determined the trace element composition of plagioclase in 68515 (figure 4).

Rust: Hunter and Taylor (1983) reported lots of rust and “schreibersite”

Chemistry

See et al. (1986) analyzed four lithologies of 68515 for major elements, but only the exterior glass has been analyzed for trace elements.

Radiogenic age dating

None

Processing

68515 was collected as a rake sample from Stone Mountain. (see section on 68501). It has been chipped (figure 6) but not sawn. There are 7 thin sections.

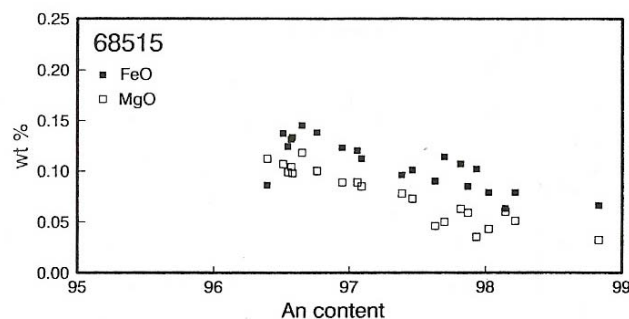


Figure 4: Trace element composition of plagioclase in the anorthositic portion of 68515 (McGee 1993)

Table 1. Chemical composition of 68515.

	glass coat	impact melt	anor.	bulk	
<i>reference</i>	Morris87	See87			
<i>weight</i>	See87				
SiO ₂ %	44.9	(a) 48.29	44.7	47.03	(b)
TiO ₂	0.41	(a) 0.9	0	0.59	(b)
Al ₂ O ₃	26.31	(a) 20.94	35.17	25.92	(b)
FeO	5.88	(a) 6.73	0.15	4.43	(b)
MnO		0.14	0.01	0.09	(b)
MgO	6.98	(a) 10.24	0.07	6.68	(b)
CaO	14.96	(a) 12.73	19.45	15.08	(b)
Na ₂ O	0.47	(a) 0.65	0.43	0.57	(b)
K ₂ O	0.1	(a) 0.3	0.02	0.2	(b)
P ₂ O ₅					
S %					
<i>sum</i>					
Sc ppm	7.59	(a)			
V					
Cr	838	(a)			
Co	47	(a)			
Ni	720	(a)			
Cu					
Zn					
Ga					
Ge ppb					
As					
Se					
Rb					
Sr					
Y					
Zr					
Nb					
Mo					
Ru					
Rh					
Pd ppb					
Ag ppb					
Cd ppb					
In ppb					
Sn ppb					
Sb ppb					
Te ppb					
Cs ppm					
Ba	356	(a)			
La	13.4	(a)			
Ce	35.6	(a)			
Pr					
Nd					
Sm	5.6	(a)			
Eu	1.29	(a)			
Gd					
Tb	1.19	(a)			
Dy					
Ho					
Er					
Tm					
Yb	4.15	(a)			
Lu	0.56	(a)			
Hf	4.1	(a)			
Ta	0.5	(a)			
W ppb					
Re ppb					
Os ppb					
Ir ppb					
Pt ppb					
Au ppb					
Th ppm	2.88				
U ppm	1.07	(a)			
<i>technique:</i>	(a) INAA, (b) broad beam e. probe				

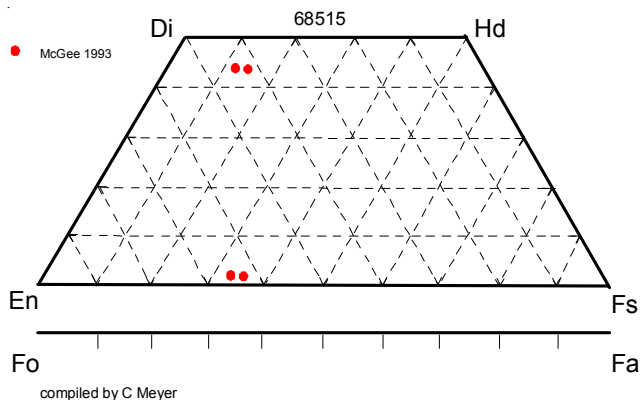
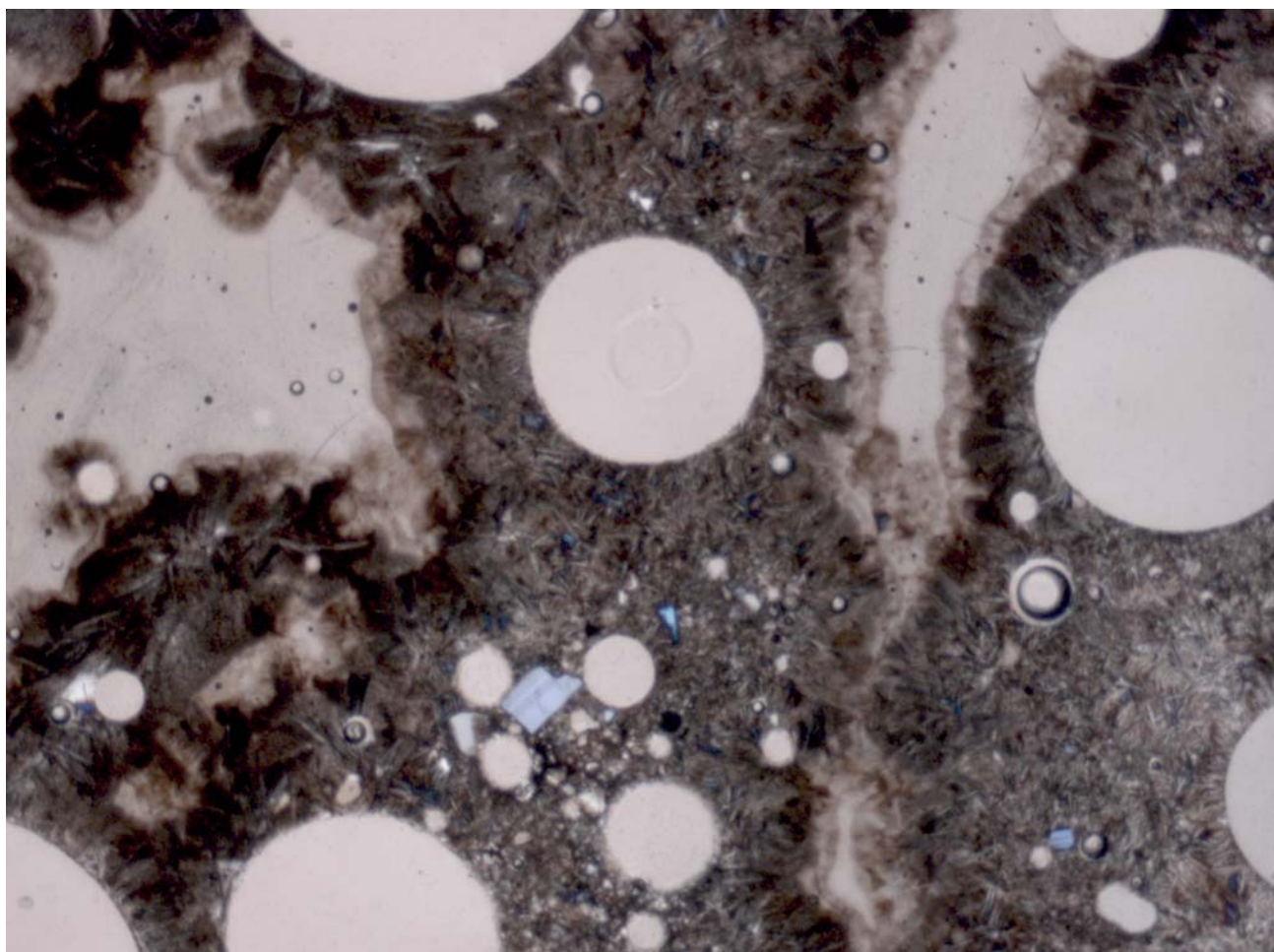
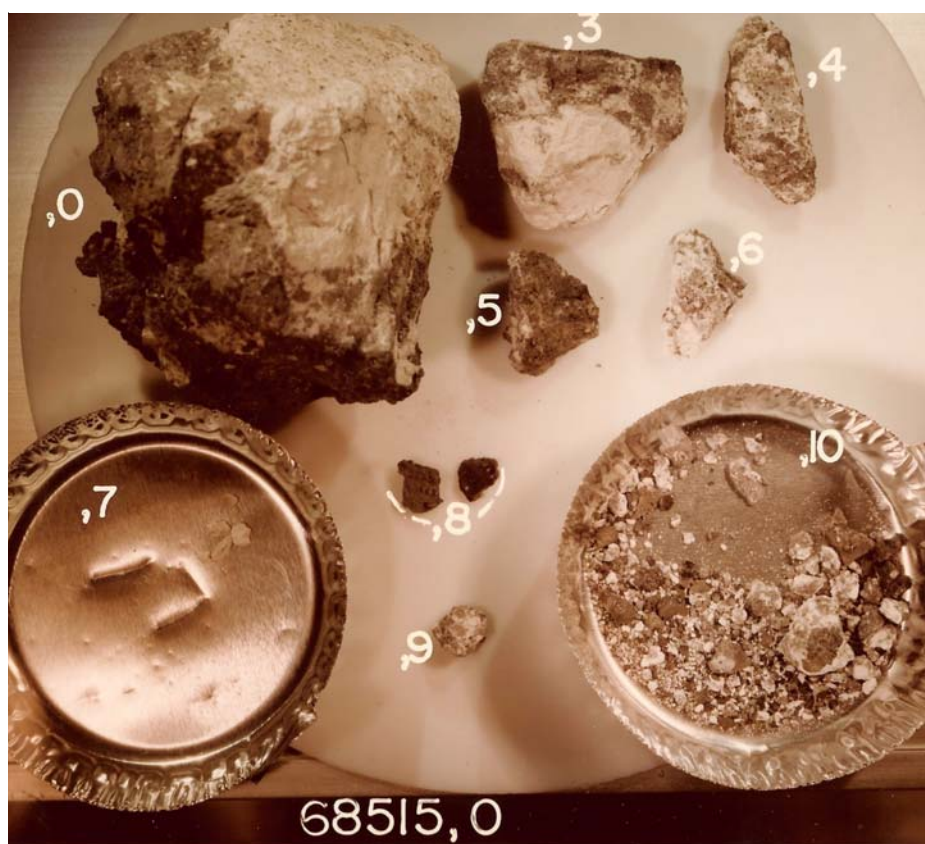


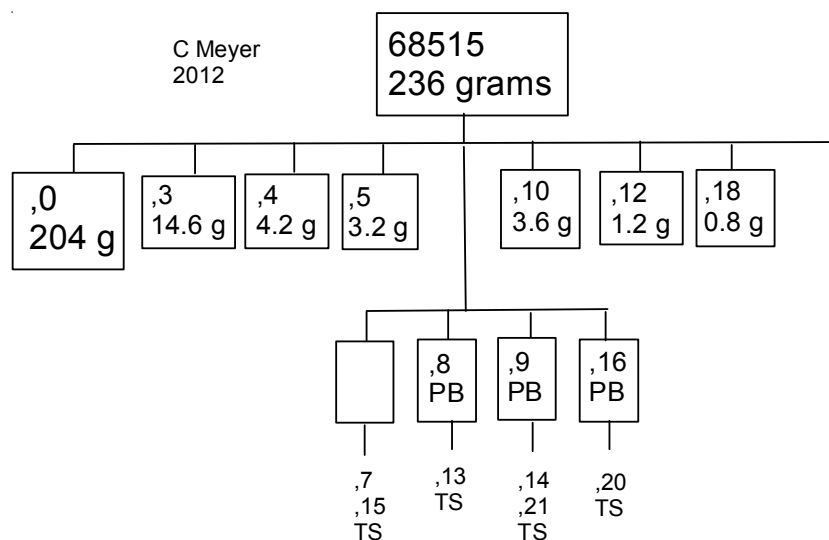
Figure 5: Composition of pyroxene in anorthositic portion of 68515 (McGee 1993).



*Figure 6:
Photomicrograph of thin
section of 68515. 2 mm
across*



*Figure 7: Processing of 68515.
S79-36095*



References for 68515

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